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CLASSIFICATION C-O-N-F-I-D-E-N-T-I-A-L

CENTRAL INTELLIGENCE AGENCY

INFORMATION REPORT

REPORT

CD NO.

COUNTRY	USSR (Sverdlovsk Oblast)	DATE DISTR.	10 May 1955
SUBJECT	Motorcycle Works at Irbit	NO. OF PAGES	10
PLACE ACQUIRED		NO. OF ENCLS. (LISTED BELOW)	
DATE OF INFO.		SUPPLEMENT TO REPORT NO.	

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THIS IS UNEVALUATED INFORMATION

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1. Attached is being forwarded as received. 25X1

2. A sample of aluminum alloy from the foundry of subject works has been assigned Sovmat Item No. 3153.

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STATE	X	NAVY	X	NSRB		DISTRIBUTION					
ARMY	X	AIR	#X	FBI							

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CLASSIFICATION CONFIDENTIAL

COUNTRY USSR REPORT

TOPIC Mototsikletny Zavod Motorcycle Works at Irbit, Ural

EVALUATION PLACE OBTAINED

DATE OF CONTENT

DATE OBTAINED DATE PREPARED 15 February 1955

REFERENCES

PAGES 4 ENCLOSURES (NO. & TYPE) 2 - two sketches with legends on ditto

REMARKS

This is UNEVALUATED Information

1. The Mototsikletny motorcycle works, also called "BMW works" by PWs, was located some 3 km southsoutheast of Irbit (57°50'N/60°38'E). A small subsidiary plant called "Instrumental", equipped with three workshops, was located in the eastern section of the town. Irbit is situated on the railroad line, at some 150 km from Sverdlovsk (56°50'N/60°38'E) and some 80 km from Turinsk (58°03'N/63°40'E). A spur track from this line branched off into the factory area. The plant was located some 200 meters east of the much frequented highway leading from Irbit to the south. [1]

2. During World War II, the machinery of a motorcycle factory near Moscow which produced motorcycles was transferred to Irbit and accommodated in an abandoned brewery. Until the end of the war, ammunition was manufactured in some buildings of this brewery. After the closing down of the ammunition production, the machinery of the motorcycle plant was installed in the old and some new provisional buildings of the brewery and, in late 1945, the production of motorcycles was started. In early 1946, PWs began the construction of permanent workshop buildings. The old Soviet machinery equipment was enlarged and replaced by dismantled machinery and reparations deliveries from the GDR, and All new buildings were finished in early 1947 and, after the installation of the machinery, production work was started in mid-1947.

3. In 1950, the motorcycle plant covered an area some 700 by 500 meters. The main workshops included the final assembly shop, the engine assembly department, a workshop for the construction of gears and clutches, and a workshop for the manufacture of components and the assembly of carburetors. The plant also included: a blacksmith shop, two foundries, a hardening department, a molding department and a precision mechanics workshop. Subsidiary departments included two garages with repair shops, a boiler house, a power plant, two administration buildings, a storage shed for finished motorcycles, an out-patient department, a school for children of factory workers, a house

for the manager, a home for apprentices, a fire brigade station, a gasoline dump, a storage point for tires and materials, a wood-working shop with a nickel-plating department, and a stockyard for iron, steel and metal sheets. In 1950, component parts for motorcycle engines were manufactured in one large and four small workshops. Electricity was generated in a factory-owned power plant, which received steam from the boiler house. Additional power was delivered via a high-voltage line from two power plants in Irbit. 2

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4. In early 1950, the plant manufactured 55-h.p. 6-cylinder water-cooled automobile engines with a 2-liter capacity [redacted] After inspection at 25X1
the test stand, the engines were shipped to an automobile factory at Ufa (53°43'N/55°58'E) where they were mounted into the cars. [redacted]
[redacted] In the beginning, the production program involved 25X1
the manufacture of motorcycles of 350 and 600 cubic centimeters capacity [redacted] After completion of the new workshops in 1947, the
manufacture of [redacted] models was started, such as solos and sidecar 25X1
machines of 250, 500 and 750 cubic centimeters capacity. Only one series of each model were manufactured at a time. The [redacted] designs were partly
modified. The [redacted] was copied 25X1
and modified into the so-called M 72, which was equipped with front axle and rear axle telescope springing, compressed steel frame, front wheel and Cardan brake, a 20-liter fuel tank, and 4-speed pedal switch. The 2-cylinder engine was rated at 24 h.p. and had a speed of 120 km per hour. All motorcycles were painted greyish-green, the sidecars were designed to mount machine guns, because the machines were meant for the exclusive use of the Soviet army or Satellite armies. Acceptance was effected by army commissions. About 80 percent of the shipments went by rail, the remainder by road. Rail shipments were dispatched in sealed freight cars to Moscow or Kharkov (50°00'N/36°15'E). In 1947, a special consignment of 6,000 motorcycles was shipped to Vladivostok. Although constructional designs and original motorcycles
[redacted] were at hand, the Soviet-made machines were of 25X1
inferior quality. They were one third heavier and material wear was much
higher than in the [redacted] models. Frequently a general overhaul proved 25X1
necessary for machines that had not run more than 2,000 km. Since 1948, individual racing motorcycles of 500 cubic centimeters piston displacement were manufactured. In 1945, the monthly output was 90 items; by early 1947 this figure rose to 200 and reached 875 in October 1947. As the result of the discharge of a great number of PWs, the monthly output dropped considerably to allegedly 30 percent or 270 items. By mid-1948, the monthly output increased to 320 items and, during the period between October 1949 and January 1950, remained at a steady 2,100 items. The norms had been fixed at 2,000. In 1947, stagnation of the production progress was a frequent occurrence due to the lack of raw materials. Such stoppages lasted up to 12 days. The Soviet forced laborers also sabotaged the operation by disrupting the underground cables. To make up for the deficit, in May and June 1947, 500 and 300 engines respectively were delivered to the plant by [redacted] located west 25X1
of the Ural Mts. Due to defective molds, 80 percent defective items were manufactured at the foundry. 3

5. In 1947, iron and steel ingots 50 x 20 x 10 cm were delivered to the plant. The foundry was supplied daily with one 60-ton freight car load of aluminum ingots 30 x 20 x 10 cm. In 1947, rubber tires were delivered from Leningrad. Ball bearings were delivered by [redacted] sidecars were delivered 25X1
by the "Instrumental" works at Irbit, which also delivered truck trailers. 4

6. When production work started in 1945, some 80 PWs and 20 Soviet specialists and master mechanics were employed per shift. Since early 1946, experts in motorcycle construction and electrical installation operations were selected from the PW camps located in the environs of Sverdlovsk. Since mid-1946, day shifts were worked from 0730 to 1700 and night shifts from 1700 to 0100 or 0300. By mid-1947, some 240 PW specialists, 300 PW handymen, and about 1,200 Soviet forced laborers were employed on the day shifts. Some 80 PW specialists, 150 PW handymen and 400 Soviets worked the night shifts. Until March 1947, some 300 PWs were employed at the erection of new buildings. After the discharge of a large number of PWs in October 1947, only some 300 PWs and 150 Soviets were employed at the plant. In 1950, some 1,500 Soviets worked the day shifts, and some 1,350

Soviets were employed at the night shifts. About 60 percent of the labor force were female. About 200 workers were komsomols. From 1948 until the end of the period under review, an army colonel was manager of the plant. Some 4 to 6 technical army officers were also permanently present. In autumn 1947, the "Instrumental" component parts factory had a 1,000-man labor force, With the exception of the master mechanics and gang bosses, all Soviet workers were forced laborers. The proportion of females was about 60 percent. 5

7. The factory area was surrounded by a board fence topped with barbed wire. The watch towers were permanently occupied by sentries equipped with machine guns. The factory police included females, civilian guards, and soldiers equipped with firearms and watch dogs. PWs had no access to the power station. Since July 1948, the final assembly shop was permanently guarded by a captain and three soldiers.

1. [redacted] Comment. For location sketch of the Irbit motorcycle works, see Annex 1 (not to scale). [redacted] in autumn 1949, the plant was subordinate to the Glavmotoveloprom, the Main Administration for the Motorcycle and Bicycle Industry at the Ministry of the Automotive and Tractor Industry. 25X1

2. [redacted] Comment. For layout plan of the Irbit motorcycle works, see Annex 2 (not to scale). The map does not include the four small workshops which manufactured automobile engines in 1949/1950, [redacted] The purpose of foundry No 6 located in the northwestern portion of the compound was [redacted] presumably motor blocks for automobile engines were cast there. 25X1 25X1 25X1

3. [redacted] Comment. [redacted] The figures related to the output of motorcycles are believed to be correct. The same applies to the reported special delivery of 6,000 motorcycles in 1947, which presumably represented the total annual output. The reported 5 percent overfulfilment of the monthly production target (2,100 items) in 1949/1950 is to be taken with reserve, in view of the fact that the targets had never been reached until that time. [redacted] This continuing underfulfilment was attributed to the low technical and economic standards and the lack of consistency on the side of the work management, to the existing disproportion between material supply and production, to a poor power factor, to systematic harassment of material supply, and to poor tools and storage management. The plant was rebuked for its poor maintenance of the machinery, for its lack of technical controls and the high percentage of defective products resulting thereof, and for the lack of funds for the construction of dwellings for factory workers. In 1951, the production target was not reached, while the production costs were 1.9 percent above the planned expenditures and during the first nine months of the year an extra 2 million rubles of government funds had to be spent for unproductive operations. 25X1 25X1

4. [redacted] Comment. It seems to be a fact that not all component parts were manufactured at the Irbit plant, but that parts were delivered by the Irbit "Instrumental" factory [redacted] 25X1 25X1

5. [redacted] Comment. Except for the data for 1948, data regarding the labor force are believed to be correct. [redacted] one Vovk (fnu) was manager of the Glavmotoveloprom in autumn 1949. [redacted] in 1949, a number of leading engineers and officials were released from their posts and transferred. This happened to the following persons: the chief of the tools department, the chief of the central laboratory, the chiefs of three other workshops, the chief technologist, the chief metallurgist, the chief of the technical cadre OTK, the plant manager, the chiefs of the assembly and engine departments, the deputy chief technologist, and to 10 other leading persons. 25X1

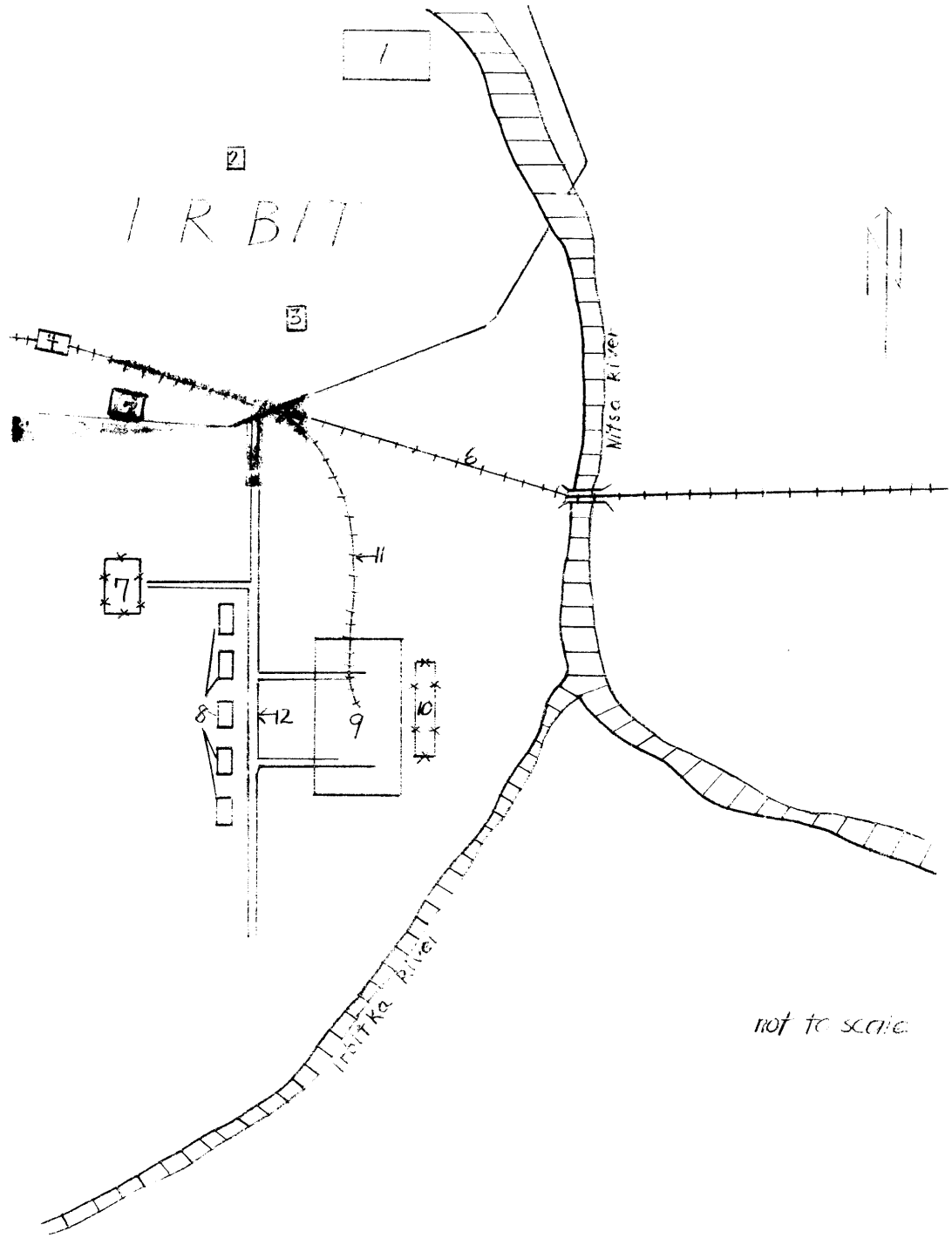
25X1

As a result of this measure, only two workshops were headed by trained and experienced engineers in autumn 1949. All other workshops were headed by master mechanics or by students from the Irbit Mototechnikum (school of technology) graduated in 1947 and 1948. Little care was taken of the labor force and the morale was low.

Annex 1

Location Sketch of the Irbit Motorcycle Works

Layout Plan of the



Legend, see next page

Location Sketch of the Irbit Motorcycle Works

Legend:

1 - "Instrumental" plant which manufactured component parts for the motorcycle plant. In 1947, this subsidiary plant consisted of three workshops. Truck trailers and motorcycle sidecars were manufactured at one of the workshops. The second floor of the building accommodated a precision mechanic shop and an armature winding shop. The second workshop which manufactured motorcycle parts contained milling machines, dies, pressing machines and machine tools. The third workshop also manufactured motorcycle parts and was equipped with modern machinery such as automatic lathes.

2 - Power plant

3 - Power plant

4 - Irbit railroad station

5 - Glass factory

6 - Sverdlovsk - Turinsk railroad line

7 - PW camp No 7523/4

8 - Settlement for workers of the motorcycle plant

9 - Mototsikletny-Zavod motorcycle plant

10 - Camp for Soviet forced laborers and PWs sentenced to hard labor. The convicts worked partly at the motorcycle plant, partly at a quarry some 4 km away.

11 - Railroad branch line to the motorcycle plant

12 - Highway from Irbit to the south, the plant was located about 200 meters east of this road.

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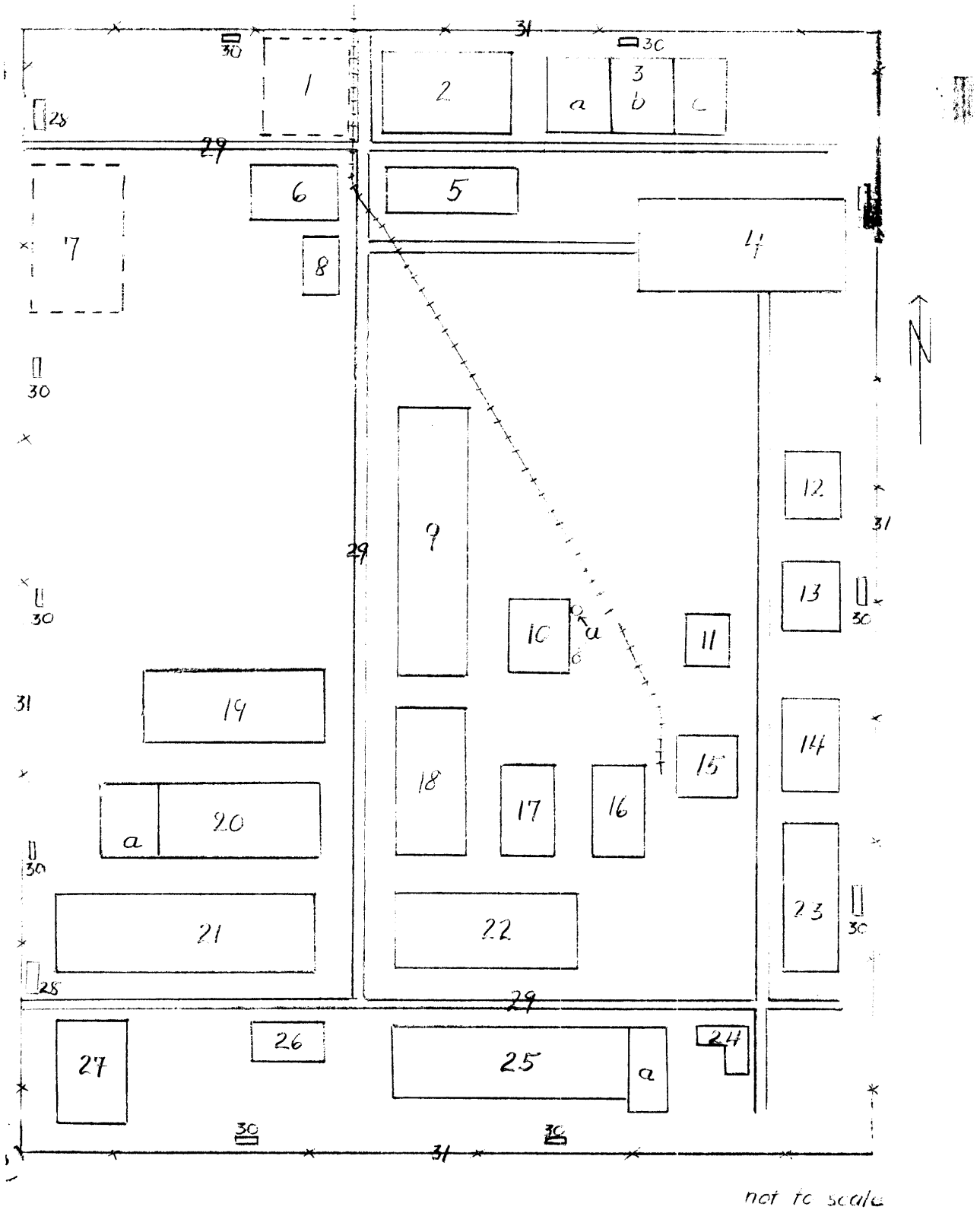
Annex 2

Layout Plan of the Irbit Motorcycle Works



not to scale

Legend, see next page

Layout Plan of the Irbit Motorcycle Works

Legend:

1 - Dumping area of iron, steel and metal sheets; in operation in autumn 1947.

2 - Storage shed 80 x 60 meters. In autumn 1947, tires, various tools, instruments, acids, paints and lacquers were stored there.

3 - Old two-story brick building 100 x 40 meters, including in autumn 1947:

a. Sawmill and wood-working shop supplying wooden molds for the molding shop as well as furniture

b. Storage rooms for tools and machine parts

c. Nickel-plating department.

4 - Workshop 100 x 50 x 12 meters. In January 1950, this shop was equipped with some 100 machine tools and manufactured gears for automobile engines. This workshop was surrounded by another four smaller workshops manufacturing automobile engine parts. These workshops are not entered in the map.

5 - Garage 80 x 25 meters, in operation in autumn 1947

6 - Foundry, a brick building 50 x 30 x 15 meters, where motor blocks were cast in January 1950

7 - Underground fuel depot 80 x 50 meters, in operation in autumn 1947

8 - Administration building, in operation in January 1950

9 - Corrugated-iron shed 150 x 40 x 12 meters for the storage of finished motorcycles. Prior to the erection of this shed, the motorcycles were left there in the open. In January 1950, motorcycles and engines were stored there.

10 - Boiler and turbine house 40 x 35 x 15 meters, a brick building with two 40-meter smokestacks, put into operation in 1945. There were three boilers about 8 meters high and 2 meters in diameter burning coal dust. Coal was delivered from the Yegorshino coal area which had a caloric value of from 4,800 to 5,200. Steam was supplied to various machines for heating purposes and for generating electricity. Three turbines were available. The underground cables leading to the different workshops were repeatedly disrupted by forced laborers in order to sabotage the operations.

11 - Dispensary

12 - School for children of factory workers, in operation in autumn 1947.

13 - House of the administrative manager.

14 - Two-story workshop, in autumn 1947 housing a turning department at the first floor, a precision mechanic workshop at the second floor. The turning department was equipped with a variety of about 200 machines. In mid-1948, three large American automatic lathes were observed there.

15 - Power plant, in operation in 1947. Steam was supplied by the boiler house.

16 - Foundry for grey castings and white metal castings, about 50 x 30 meters with a 30-meter smokestack. In autumn 1947, 11 smelting furnaces including 5-6 Martin furnaces were available, in addition to several electric smelting furnaces of German (Siemens, AEG) or Swedish make. Cylinder blocks, piston rings, babbitt metal cylinders, casings, brake backing plates, bushings and pistons were manufactured there.

17 - Hardening and grinding department, about 50 x 30 meters. In autumn 1947, abrading and grinding machines, several milling machines, lathes and test stands were available at this shop.

18 - Blacksmith shop 80 x 40 x 15 meters with a 50-meter smokestack. In autumn 1947, two 5-ton steam hammers with punching, pressing and bending devices were in operation, in addition to a large 20-ton steam hammer and several spring hammers. There was one large compressed-air furnace and 10-12 small electrically-heated as well as coal and oil-burning furnaces. This shop manufactured frames, rims, shafts, axles, flanges and lugs.

19 - Workshop about 100 x 40 x 15 meters, put into operation in February 1947. By autumn 1947, the following equipment had been installed: about 35 German, American and Russian lathes, 20-30 boring and milling machines, 10-15 grinding machines including several cylinder grinding machines, and several autogenous and electric welding units. This workshop produced various parts such as steering gears. In one department carburetors were assembled, in another, cylinders and pistons were ground. The welding department welded frames, mudguards, and gasoline tanks.

20 - The gears department which measured about 120 x 40 x 15 meters was put into operation in March 1947. Seven rows of about 40 machines including lathes, milling machines, boring and grinding machines were available and were connected by an assembly line. Springs, nuts and bolts, axles, cardan shafts, cylinder heads, and different kinds of gears were manufactured there. In addition to the assembly of couplings, gears were assembled at department a, located in the western portion of the workshop.

21 - Engine workshop, a two-story building 150 x 40 x 15 meters. The old Russian machinery equipment was replaced by American machines including lathes, automatic lathes, planers and dies. Finished parts were stored at the second floor. All motorcycle parts other than cylinder blocks were manufactured at this shop. Engines were also assembled there.

22 - Molding and cleaning department, about 100 x 40 meters. Molds for the foundry were made there and castings were cleaned.

23 - Garage and repair shop for factory-owned cars, in operation in autumn 1947.

24 - Four-story administration building about 25 x 15 meters, put into operation in summer 1946, containing administration offices and technical bureaus.

25 - Main workshop for the final assembly of motorcycles, a building 150 x 40 x 15 meters with an annex (a) to the east about 60 x 20 x 10 meters, which housed the paint-spraying department. This workshop included several departments for punching, turning, boring, welding and grinding purposes, and was equipped with an assembly line and several test stands. Prior to 1945, ammunition had been produced at this shop, which was then converted into the final assembly shop for motorcycles. The finished machines tested and then dispatched for test runs.

26 - Fire brigade station, a two-story building 40 x 20 meters, put into operation in autumn 1947 and equipped with three fire engines.

27 - Apprentices home, a two-story building 60 x 30 meters

28 - Guard house

29 - Factory roads, The main factory road traversed the compound from north to south and was constructed 30 meters wide of reinforced concrete. The main entrance was to scheduled to be built at the northern end. A road running outside the compound along the northern boundary was a wooden structure 10 meters wide. In mid-1947, another road was built along the southern boundary.

30 - Watch towers

31 - Fence

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CENTRAL INTELLIGENCE AGENCY

INFORMATION REPORT

REPORT [redacted]

CD NO.

COUNTRY USSR (Sverdlovsk Oblast)

DATE DISTR. 10 May 1955

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NO. OF PAGES

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[redacted]

1. Attached is [redacted]

2. A sample of aluminum alloy from the foundry of subject works has been assigned Sovmat Item No. 3153.

[redacted]

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STATE	X	NAVY	X	NSRB	DISTRIBUTION
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REFERENCES

PAGES 4 ENCLOSURES (NO. & TYPE) 2 - two sketches with legends on ditto

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2. During World War II, the machinery of a motorcycle factory near Moscow which produced [redacted] motorcycles was transferred to Irbit and accommodated in an abandoned brewery. Until the end of the war, ammunition was manufactured in some buildings of this brewery. After the closing down of the ammunition production, the machinery of the motorcycle plant was installed in the old and some new provisional buildings of the brewery and, in late 1945, the production of motorcycles was started. In early 1946, P/s began the construction of permanent workshop buildings. The old Soviet machinery equipment was enlarged and replaced by dismantled machinery and reparations deliveries from the GDR, and [redacted] 25X1

All new buildings were finished in early 1947 and, after the installation of the machinery, production work was started in mid-1947.

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As a result of this measure, only two workshops were headed by trained and experienced engineers in autumn 1949. All other workshops were headed by master mechanics or by students from the Irbit Mototechnikum (school of technology) graduated in 1947 and 1948. Little care was taken of the labor force and the morale was low.

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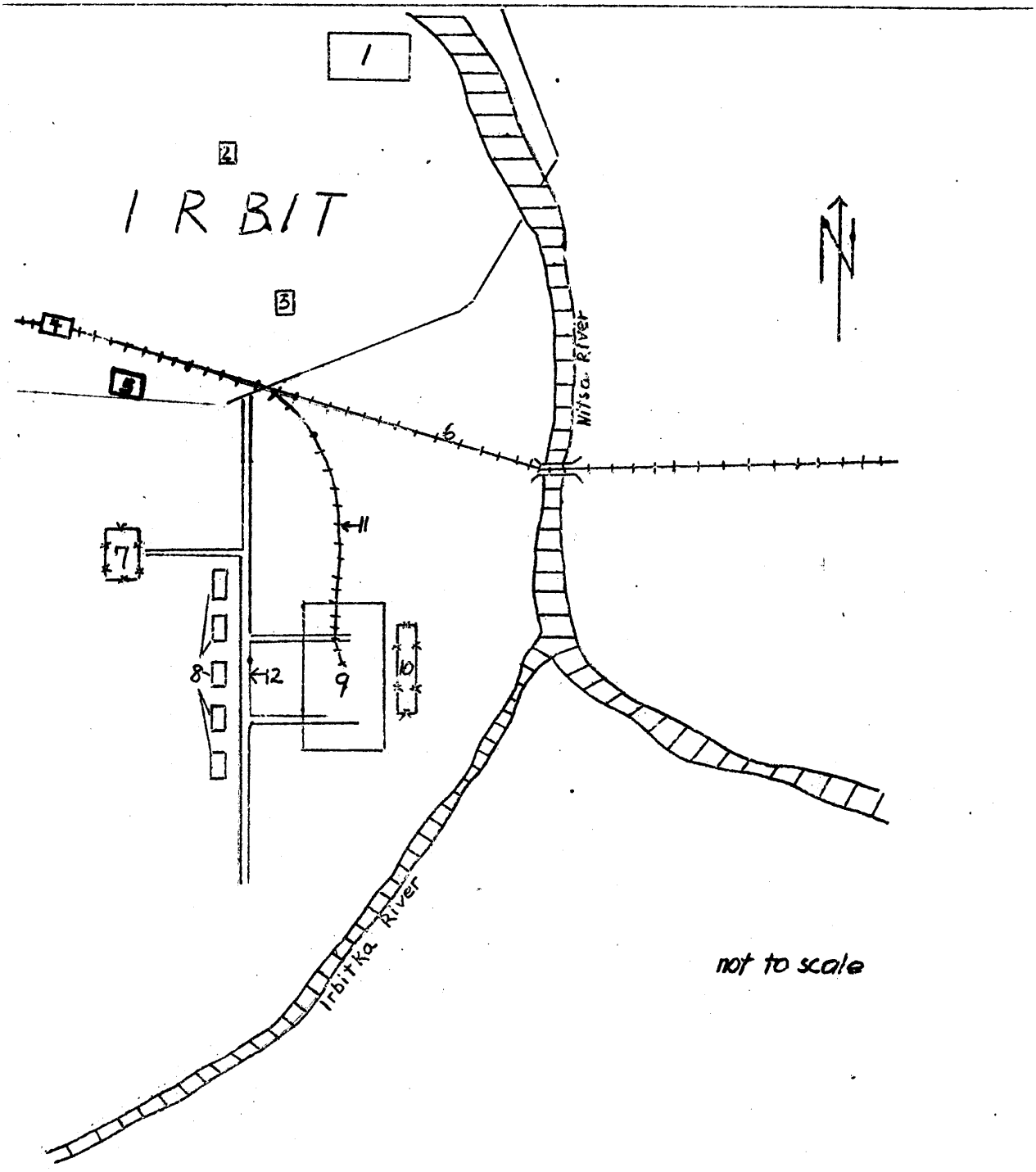
Annex 1 [redacted] 25X1

Location Sketch of the Irbit Motorcycle Works



Legend, see next page

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Location Sketch of the Irbit Motorcycle Works

Legend:

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2 - Power plant

3 - Power plant

4 - Irbit railroad station

5 - Glass factory

6 - Sverdlovsk - Turinsk railroad line

7 - PW camp No 7523/4

8 - Settlement for workers of the motorcycle plant

9 - Mototsikletny-Zavod motorcycle plant

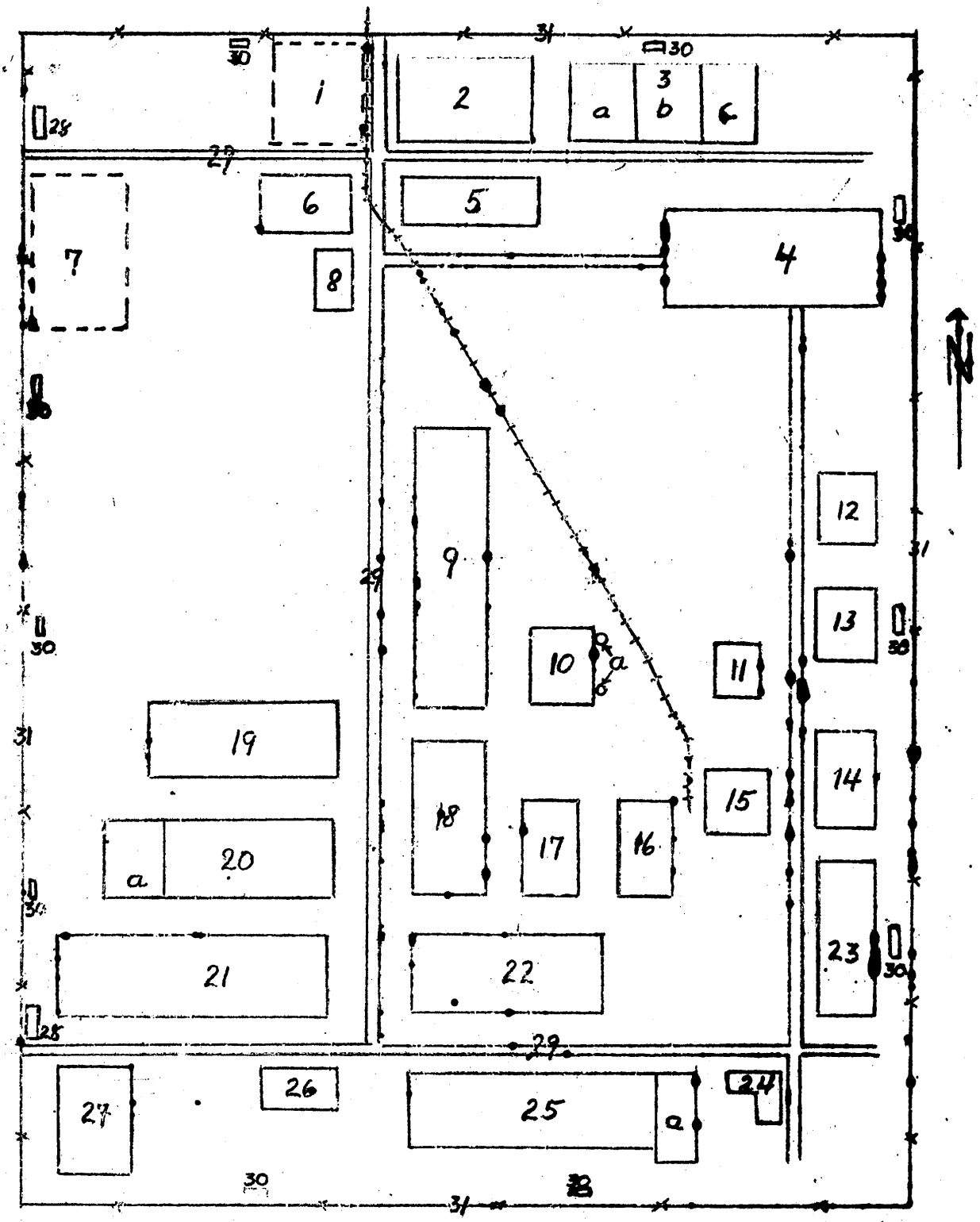
10 - Camp for Soviet forced laborers and PWs sentenced to hard labor. The convicts worked partly at the motorcycle plant, partly at a quarry some 4 km away.

11 - Railroad branch line to the motorcycle plant

12 - Highway from Irbit to the south, the plant was located about 200 meters east of this road.

Annex 2 25X1

Layout Plan of the Irbit Motorcycle Works



Not to scale

Legend, see next page

Layout Plan of the Irbit Motorcycle Works

Legend:

1 - Dumping area of iron, steel and metal sheets; in operation in autumn 1947.

2 - Storage shed 80 x 60 meters. In autumn 1947, tires, various tools, instruments, acids, paints and lacquers were stored there.

3 - Old two-story brick building 100 x 40 meters, including in autumn 1947:

a. Sawmill and wood-working shop supplying wooden molds for the molding shop as well as furniture

b. Storage rooms for tools and machine parts

c. Nickel-plating department.

4 - Workshop 100 x 50 x 12 meters. In January 1950, this shop was equipped with some 100 machine tools and manufactured gears for automobile engines. This workshop was surrounded by another four smaller workshops manufacturing automobile engine parts. These workshops are not entered in the map.

5 - Garage 80 x 25 meters, in operation in autumn 1947

6 - Foundry, a brick building 50 x 30 x 15 meters, where motor blocks were cast in January 1950

7 - Underground fuel depot 80 x 50 meters, in operation in autumn 1947

8 - Administration building, in operation in January 1950

9 - Corrugated-iron shed 150 x 40 x 12 meters for the storage of finished motorcycles. Prior to the erection of this shed, the motorcycles were left there in the open. In January 1950, motorcycles and engines were stored there.

10 - Boiler and turbine house 40 x 35 x 15 meters, a brick building with two 40-meter smokestacks, put into operation in 1945. There were three boilers about 8 meters high and 2 meters in diameter burning coal dust. Coal was delivered from the Yegorshino coal area which had a caloric value of from 4,800 to 5,200. Steam was supplied to various machines for heating purposes and for generating electricity. Three turbines were available. The underground cables leading to the different workshops were repeatedly disrupted by forced laborers in order to sabotage the operations.

11 - Dispensary

12 - School for children of factory workers, in operation in autumn 1947.

13 - House of the administrative manager.

14 - Two-story workshop, in autumn 1947 housing a turning department at the first floor, a precision mechanic workshop at the second floor. The turning department was equipped with a variety of about 200 machines. In mid-1948, three large American automatic lathes were observed there.

15 - Power plant, in operation in 1947. Steam was supplied by the boiler house.

16 - Foundry for grey castings and white metal castings, about 50 x 30 meters with a 30-meter smokestack. In autumn 1947, 11 smelting furnaces including 5-6 Martin furnaces were available, in addition to several electric smelting furnaces of German (Siemens, AEG) or Swedish made. Cylinder blocks, piston rings, babbitt metal cylinders, casings, brake backing plates, bushings and pistons were manufactured there.

17 - Hardening and grinding department, about 50 x 30 meters. In autumn 1947, abrading and grinding machines, several milling machines, lathes and test stands were available at this shop.

18 - Blacksmith shop 80 x 40 x 15 meters with a 50-meter smokestack. In autumn 1947, two 5-ton steam hammers with punching, pressing and bending devices were in operation, in addition to a large 20-ton steam hammer and several spring hammers. There was one large compressed-air furnace and 10-12 small electrically-heated as well as coal and oil-burning furnaces. This shop manufactured frames, rims, shafts, axles, flanges and lugs.

19 - Workshop about 100 x 40 x 15 meters, put into operation in February 1947. By autumn 1947, the following equipment had been installed: about 35 German, American and Russian lathes, 20-30 boring and milling machines, 10-15 grinding machines including several cylinder grinding machines, and several autogenous and electric welding units. This workshop produced various parts such as steering gears. In one department carburetors were assembled, in another, cylinders and pistons were ground. The welding department welded frames, mudguards, and gasoline tanks.

20 - The gears department which measured about 120 x 40 x 15 meters was put into operation in March 1947. Seven rows of about 40 machines including lathes, milling machines, boring and grinding machines were available and were connected by an assembly line. Springs, nuts and bolts, axles, cardan shafts, cylinder heads, and different kinds of gears were manufactured there. In addition to the assembly of couplings, gears were assembled at department a, located in the western portion of the workshop.

21 - Engine workshop, a two-story building 150 x 40 x 15 meters. The old Russian machinery equipment was replaced by American machines including lathes, automatic lathes, planers and dies. Finished parts were stored at the second floor. All motorcycle parts other than cylinder blocks were manufactured at this shop. Engines were also assembled there.

22 - Molding and cleaning department, about 100 x 40 meters. Molds for the foundry were made there and castings were cleaned.

23 - Garage and repair shop for factory-owned cars, in operation in autumn 1947.

24 - Four-story administration building about 25 x 15 meters, put into operation in summer 1946, containing administration offices and technical bureaus.

25 - Main workshop for the final assembly of motorcycles, a building 150 x 40 x 15 meters with an annex (a) to the east about 60 x 20 x 10 meters, which housed the paint-spraying department. This workshop included several departments for punching, turning, boring, welding and grinding purposes, and was equipped with an assembly line and several test stands. Prior to 1945, ammunition had been produced at this shop, which was then converted into the final assembly shop for motorcycles. The finished machines tested and then dispatched for test runs.

26 - Fire brigade station, a two-story building 40 x 20 meters, put into operation in autumn 1947 and equipped with three fire engines.

27 - Apprentices home, a two-story building 60 x 30 meters

28 - Guard house

29 - Factory roads. The main factory road traversed the compound from north to south and was constructed 30 meters wide of reinforced concrete. The main entrance was to scheduled to be built at the northern end. A road running outside the compound along the northern boundary was a wooden structure 10 meters wide. In mid-1947, another road was built along the southern boundary.

30 - Watch towers

31 - Fence